related to *L. Lebouri*, described by Mr. Percy Sladen before this Society in 1879; but it also has affinities with *L. cincinnatiensis* and *L. squamosus*. From all these, however, the present specimen differs in having the pyramid in the middle of the interradial space, in possessing shorter arms, and in being much smaller. This fossil is to be named *Lepidodiscus Milleri*, after Mr. Hugh Miller, under whose direction these fossils were collected by Mr. J. Rhodes.

2. "*Archæopneustes abruptus*, a new Genus and Species of Echinoid from the Oceanic Series in Barbados." By J. W. Gregory, Esq., B.Sc., F.G.S.

This genus belongs to a group of Echinoidea which has given some trouble to systematists, owing to the union of the characters of the orders Cassiduloidea and Spatangoidea; the other genera belonging to the group are *Asterostoma*, *Pseudasterostoma*, and *Palæopneustes*. The evidence of the new Echinoid throws light upon the affinities of these genera. The main points suggested by a study of the new species are:—(1) the abandonment of the name *Pseudasterostoma* as a synonym of *Palæopneustes*; and (2) the inclusion of the true *Asterostoma*, *Palæopneustes*, and *Archæopneustes*, in the Adete Spatangoidea, whereby the Plesiospatangidæ are left as a more homogeneous family, though bereft of the chief interest assigned to it.

A tabular summary of the nomenclature of the group is given.

The best-known fossil species of *Asterostoma* and *Palæopneustes* occur in Cuba, in deposits referred to the Cretaceous owing to the resemblance of these Echinoids to the common Chalk *Echinocorys scutatus*. The new genus includes a species from the same deposit, which is probably of the same age as the Bissex Hill rock from which the new species was obtained; this is at the top of the Oceanic Series, and belongs to the close of the great subsidence.

MISCELLANEOUS.

Note on Abnormalities in the Crayfish (Astacus fluviatilis). By W. N. Parker, Ph.D.

While a number of crayfishes were being dissected by my students last month I noticed that three of the specimens presented certain abnormalities which, although perhaps not so interesting as the case recently described in this Journal by Benham*, are probably worthy of record.

Specimen I.—On the left side, in addition to the normal pleurobranch of segment 13, a small but well-developed gill was present on the wall of segment 12 in place of the usual rudimentary style. This gill was about three quarters as long as the pleurobranch normally present.

Specimen II.—The last arthrobranch of the left side, *i. e.* the

* "Note on a Couple of Abnormalities," 'Annals,' ser. 6, vol. vii. no. 39, March 1891, p. 256.

posterior arthrobranch of segment 12, was forked. The bifurcation began close above the base, the two branches being nearly equal to one another in size and having the usual structure.

Specimen III.—This specimen presented a partial fusion of the fourth and fifth abdominal segments. Looked at from the tergal side the abnormality could not be seen, but the calcified sternal bars were completely fused from the middle line nearly to the attachment of the appendage on the right side. On the left of the middle line the two sternal bars were separated by a narrow uncalcified portion, and a certain amount of movement between the two segments was still possible, owing to the elasticity of the narrow and partially fused sternal bars. The appendages were normal, but the distance between the attachments of those on segments 4 and 5, left and right, was naturally much less than usual, as the sternal region of these segments was so much reduced in length.

Cardiff,
Jan. 12, 1892.

The Chromatophores of Cephalopods.

By M. Raphaël Blanchard.

The radiating fibres which are found around the chromatophores of Cephalopods have been described by various authors as muscles which are inserted into the enveloping membrane: by contracting they would expand the chromatophore, on relaxing they would permit it to revert to its original condition and to efface itself more or less.

In the year 1882 I showed that, during the changes of form to which they are continually subject, the chromatophores alone are active. As a matter of fact attentive histological study enables me to state that the radiating fibres are neither muscles nor nerves, but simply fibres of connective tissue, presenting a peculiar orientation in the neighbourhood of the chromatophore, with which, however, they have no connexion. Soon afterwards a perfectly similar statement was made by M. Girod; this very year these observations have received further confirmation at the hands of M. Joubin *.

Nevertheless it has been recently stated by M. Phisalix † that "the radial fibres are muscles," and he affirms that the expansive movements of the chromatophore "are determined by the contraction of muscles arranged radially at its equator." He mentions elsewhere the writings of M. Girod, M. Joubin, and myself.

M. Phisalix cites, in support of his opinion, the researches of MM. Paul Bert and Frédéricq; but neither of them has verified anatomically the muscular nature of the radiating fibres; if they attribute this structure to them, it is solely because it was admitted by the naturalists of the period. The interesting experiments made by M. Phisalix, following upon those of the two observers mentioned above, are explained by the intimate union of the chromatophore with the nerves. *I expressly recognized* this union, and the result of my observations appears to me to remain unimpaired.—*Comptes Rendus*, tome cxiii. no. 17 (Oct. 26, 1891), pp. 565, 566.

* Ann. & Mag. Nat. Hist. 1891, viii. p. 111. † *Vide infrà.*